

21-06-2004

## C L A I M S

1. Separator for battery including a plate shaped structure of inorganic fibers, c h a r a c t e r i z e d in that said separator is impregnated with a dispersion of colloidal  
5 inorganic nano particles that have been enriched in the crossing points of the fibers so as to form binding agent when a solvent of the dispersion has dried.
2. Separator according to claim 1, c h a r a c t e r i z e d in that the separator has been heat treated at a temperature  
10 between 300 and 700°C in order to obtain a considerably greater rigidity.
3. Separator according to claim 1 or 2, c h a r a c t e r i z e d in that the inorganic fibers comprise material of any of the group: glass fiber, mineral  
15 fiber, metal fiber.
4. Separator according to claim 1, 2 or 3, c h a r a c t e r i z e d in that the binding agent includes any of the group:  $\text{SiO}_2$ ,  $\text{Al}_2\text{O}_3$ ,  $\text{Al}(\text{OH})_3$ ,  $\text{TiO}_2$ .
5. Separator according to any of the previous claims, c h a r a c t e r i z e d in that the binding agent  
20 comprises between about 20% and 60% of the total separator weight.
6. Separator according to claim 5, c h a r a c t e r i z e d in that the binding agent comprised between about 25 and 45%  
25 of the total separator weight.
7. Battery with positive and negative electrodes, separators and electrolyte, c h a r a c t e r i z e d in that it

includes at least one separator according to any of the claims  
1 - 6.

8. Battery according to claim 7, c h a r a c t e r i z e d  
in that it is mounted with a pressure at its electrodes of at  
5 least 100 kPa, preferably 150 - 250 kPa.

9. Battery according to claim 7 or 8,  
c h a r a c t e r i z e d in that binding agent has been  
supplied to the separator in such an amount that it is  
compressible to about 80% of its thickness at an outside  
10 applied pressure of between 80 and 250 kPa.

10. Battery according to claim 7, 8 or 9 in bipolar form,  
c h a r a c t e r i z e d in that a pressure relieving grid  
is positioned in each negative electrode.

11. Battery according to any of the claims 7 - 10,  
15 c h a r a c t e r i z e d in that it is comprised of a lead  
battery with sulphuric acid electrolyte.

12. Method of producing a separator for a battery, wherein a  
disk-shaped structure comprising inorganic fibres is used,  
c h a r a c t e r i z e d in that said separator is  
20 impregnated with a dispersion of colloidal inorganic nano  
particles which are enriched in the crossing points of the  
fibres so as to form binding agent when a solvent of the  
dispersion is made to dry.

13. Method according to claim 12, c h a r a c t e r i z e d  
25 in that drying of solvent is obtained through drying at raised  
temperature.

14. Method according to claim 12 or 13,  
c h a r a c t e r i z e d in that the separator after drying

21-06-2004

the solvent is heat treated at a temperature between 300 and 700°C in order to obtain a considerably greater rigidity of the bond in said crossing points.

15. Method according to claim 12, 13 or 14,

5 c h a r a c t e r i z e d in that the inorganic fibres including material from any of the group: glass fibres, mineral fibres, metal fibres are used.

16. Method according to any of claims 12 - 15,

10 c h a r a c t e r i z e d in that binding agent from the group:  $\text{SiO}_2$ ,  $\text{Al}_2\text{O}_3$ ,  $\text{Al}(\text{OH})_3$ ,  $\text{TiO}_2$  is used.

17. Method according to any of claims 12 - 16,

c h a r a c t e r i z e d in that the binding agent is brought to comprise between about 20 and 60% of the total separator weight.

15 18. Method according to any of the claims 12 - 17,

c h a r a c t e r i z e d in that the binding agent is brought to comprise between about 25 and 45% of the total separator weight.